# **SRFB Scope Change Request**

Project Name:	Arrowhead Lagoon Restoration
Project Number:	IAC #04-1217R
Project Sponsor:	Skagit River System Cooperative
Lead Entity:	Island County
Ranking:	1 of 2 in 4th Round,
SRFB Funds:	\$ 221,127 (85%)
Sponsor Match:	\$ 39,203 (15%)
Total:	\$ 260,150 (100%)

#### **Request:**

SRSC requests to change the scope for these funds earmarked for Arrowhead Lagoon to a large-scale marsh restoration project located at Crescent Harbor. SRSC has been working with the US Navy to address funding concerns that had stalled completion of the Crescent Harbor project. We would like to partially address those funding concerns with this project change request.

A detailed project proposal accompanies this request.

#### **Original Project Description:**

Arrowhead Lagoon (AL) is a nearshore pocket estuary located along the north shore of Camano Island. The lagoon is located along the path of currents from the Skagit and Stillaguamish Rivers, thereby providing refuge, foraging, and rearing opportunity for fry migrant Chinook, as well as a nursery and nearshore habitat for other estuarine/marine fish species.

Skagit River System Cooperative (SRSC), in cooperation with local landowners, proposes to restore approximately 2.0 acres of intertidal habitat within the eastern portion of AL. Currently natural ecosystem function is impaired due to manmade constrictions within the inner lagoon. Actions will include removal of trail fill, a failing culvert, and a short bridge; construction of a new bridge; removal of fill along the northern interior shoreline; and revegetation in selected areas.

This restoration proposal is timely because local landowners, represented by the Eagle Tree Estates Property Owners' Association (ETEPOA), have requested assistance for a failing culvert in the existing beach access trail fill. Removal of fill and construction of a



Figure 1



Figure 2

spanning bridge would result in significant ecological improvement compared to the proposed culvert replacement alone. SRSC will work closely with the property owners to address beach access concerns and maximize restoration

# Arrowhead Lagoon Project History:

After considerable time and effort the Arrowhead Lagoon Restoration project was unable to go to construction due to an inability to gain final landowner consent from the local community. The vast majority of the Eagle Tree Estates Homeowners Association were in favor, or at least supportive, of our project proposal. However, in the final analysis one homeowner (the Casne's) chose not to support the project. Repeated efforts to discuss or to meet the Casne's concerns met with no success. Without the consent of the Casne's we were unable to identify a means by which the interests of the majority of the community could be addressed. Therefore the project had to be abandoned.

# **Crescent Harbor Project Description:**

The Crescent Harbor Salt Marsh, located on Naval Air Station Whidbey Island (NASWI), was historically the largest open barrier island salt marsh on Whidbey Island (approximately 300 acres, Philip Williams and Associates 2003). The Skagit Chinook Recovery Plan (SRSC and WDFW 2005) identifies this marsh as one of twelve priority restoration sites within one day's migration from the Skagit River Delta for juvenile Chinook salmon. Compared to adjacent nearshore habitat, pocket estuary habitat such as the Crescent Harbor Salt Marsh is thought to provide survival and growth advantages for juvenile Chinook salmon that have been displaced from their natal river deltas by flooding or high fish density (Beamer et al. 2003). This is a much larger and more beneficial project than the one proposed at Arrowhead Lagoon.

The Crescent Harbor Salt Marsh has been cut off from fish access and is largely disconnected from tidal exchange except through ground water. The site is currently diked and ditched, with minimal tidal exchange occurring through a tide gate. Much of the historic marsh, tidal channel, and freshwater tributary habitat at this site has excellent potential for restoration, except for an approximately 13-hectare (32 acre) wastewater treatment pond (WWTP) located in the center of the marsh and associated dikes for access and sewage pipes. The site has been divided into northwestern, southwestern, and eastern cells based on these cross-dikes.

Proposed restoration actions to restore fish access and tidal flow at the Crescent Harbor Salt Marsh were originally developed by Philip Williams & Associates, Ltd. (PWA) for Island County Public Works and Naval Air Station Whidbey Island. The specific actions that will be undertaken by NASWI and the Skagit River System Cooperative (SRSC) as part of this plan include (in order of completion): June 6, 2007

- 1. Breaching the northeast sewer intake dike to increase tidal volume and fish access between the northwest and east salt marsh cells.
- 2. Replacing an undersized culvert currently connecting the southwest and east salt marsh cells to improve fish access and tidal circulation.
- 3. Removing fill within the marsh at the southern edge of the WWTP to increase tidal prism and promote circulation and mixing of fresh and marine waters.
- 4. Creating a notched weir at the sewer intake dike separating the southwest and the northwest salt marsh cells to allow tidal circulation.
- 5. Breaching the remaining beach berm near the existing tide gate and reconnecting the existing channel network to Crescent Harbor through the Seabee bridge.



Figure 3



#### **Crescent Harbor Project History:**

In 2003, PWA completed the feasibility assessment and restoration/construction plan for this project for Island County with SRFB funds. This assessment considered both historic and existing conditions (physical and biological), hydraulic processes, flood protection, fish passage, and system constraints. Three alternative restoration plans were evaluated as part of this process: No Action, Muted Tidal Marsh Restoration, and Fully Tidal Marsh Restoration. After detailed consideration of the above factors, Fully Tidal Marsh Restoration emerged as the preferred alternative for this site. This alternative provides the greatest level of tidal exchange and access for juvenile salmon and creates fully tidal salt marsh habitat onsite, while reducing potential for seasonal flooding of the WWTP (PWA 2003). Island County was able to initiate the project by pulling back the dike along the main channel. However, Island County had to close the SRFB project and return funds to the SRFB because construction was unable to be completed within the timeframe of the SRFB grant due to the start of the Iraq war and the Navy SeaBees being pulled from the project budget as construction match. In addition, the City of Oak Harbor was concerned about their wastewater treatment plant. The County could not proceed until this issue was resolved.

In 2006, the NASWI SeaBees completed a restoration action by constructing an approximately 100' bridge on East Pioneer Way, at the southeastern boundary of the marsh. This bridge spans a channel opening that is currently not connected to either tidal influence or the interior salt marsh, except through groundwater, so additional restoration actions are needed. The bridge/channel is situated near the current location of the tide-gate, so only a moderate amount of excavation will be required to achieve tidal connectivity. Shortly after finishing this work the SeaBee Battalion was again deployed to the Middle East.

In recent months the NASWI learned that the SeaBee deployment would be indefinite; therefore, internal NASWI resources and plans for project completion were compromised. Shortly after these developments, the NAS Environmental coordinator, John Phillips, was contacted by Steve Hinton, Director of Habitat Restoration for the SRSC, regarding the status of the project. After touring the site and discussing the complexities of implementation, both parties agreed to explore the prospects for funding project implementation through other means. In partnership with NASWI, the SRSC is proposing to work towards acquiring resources through other granting agencies, including the SRFB, to implement restoration actions based on those outlined in the PWA feasibility assessment.

During the summer of 2007, the City of Oak Harbor Public Works Department (OHPW) has plans to upgrade and protect WWTP infrastructure. As part of this process, SRSC will coordinate with City contractors (pending funding support) to allow construction of a notch weir through the west sewer intake dike, as identified above (restoration action 4). The City also plans to armor portions of the WWTP dike expected to be exposed to tidal scour.

# **Relative Habitat Gains:**

Arrowhead Lagoon and Crescent Harbor Salt Marsh are both pocket estuary sites within a single day's migration from the Skagit River delta, and thus hold similar habitat value for juvenile salmonids and forage fish. Restoration at either of these sites is expected to benefit all six stocks of wild Skagit Chinook salmon. However, restorable area at Crescent Harbor Salt Marsh is much larger than at Arrowhead Lagoon, so the magnitude of habitat benefits offered by restoration is expected to be significantly greater.

At Arrowhead Lagoon, actions proposed for SRFB funding will result in the restoration of approximately 2.0 acres of intertidal habitat for juvenile Chinook salmon in the eastern portion of the lagoon. Implementation of all project components outlined in the Skagit Chinook Recovery Plan (SRSC and WDFW 2005) is anticipated to restore approximately 6.0 acres of intertidal habitat, and tidal channel habitat will increase by approximately 1.7 acres. The capacity of the entire 11.8 acre lagoon (3,671 fish) should be protected by project components, and nearshore habitat Chinook capacity is expected to increase by 799 smolts annually.

In comparison, proposed restoration at Crescent Harbor Salt Marsh will result in the restoration of approximately 205 acres of barrier salt marsh habitat to fish access and tidal exchange. Allometric models of tidal channel development indicate that while overall tidal channel habitat area will change little following restoration, daily tidal inundation is anticipated to increase tidal channel length by 33,658 linear feet (Hood 2007). Juvenile Chinook are anticipated to use the site immediately upon project

completion, and completed restoration will increase nearshore habitat Chinook capacity by an estimated 15,938 smolts annually (SRSC and WDFW 2005). This increase in habitat is also expected to benefit other native Puget Sound salmonids, including coho, bull trout, and cutthroat trout, which are Washington State Species of concern.

# Anticipated Construction Timeline (Crescent Harbor Salt Marsh):

Following completion of bridge construction at the tidal inlet- a major project component (estimated value \$500,000), NASWI remains committed to implementing restoration actions at Crescent Harbor Salt Marsh. NASWI will allocate the necessary staff and engineering resources to allow project implementation to proceed. This includes acquiring the necessary permits and documentation for project completion (estimated value \$10,000) and providing engineering consultation and review (estimated value \$20,000).

The United States Navy is the landowner for Crescent Harbor Salt Marsh, so permitting for this project is anticipated to proceed smoothly. Because this site lies entirely on a military installation, neither state and local permits nor ESA consultation is required for restoration to proceed. Work for this project will be categorized as maintenance of existing structures, and will thus be covered under Army Corps of Engineers Nationwide Permit 3. NASWI staff has begun the process of acquiring this permit. OHPW has completed a Joint Aquatic Resource Permits Application for their WWTP maintenance and infrastructure work. The only permit still pending approval is the Army Corps of Engineers 404 and the JARPA for restoration work will be submitted the first week in August. This project will also require a categorical exclusion of NEPA requirements from the NASWI Commanding Officer.

The salt marsh currently has no fish passage, so most construction activities will have limited or no effect on fish, which will make the process of acquiring federal permits relatively easy. It is anticipated that the permitting process will be completed by the time grant funds are secured. Based on the restoration design developed by PWA and SRSC, resources committed by NASWI, and project components planned for implementation in summer 2007 by OHPW, SRSC anticipates that construction of components of proposed actions will commence during the summer of 2007. All elements of the project will likely be completed by summer of 2008. Construction will begin with the breach of the northeast sewer intake dike and will proceed in the order listed in the Crescent Harbor Project Description (above). The final restoration component, breaching the beach berm beneath the bridge constructed by the SeaBees, will reconnect the interior marsh to tidal inundation, and will thus be completed once all other project components have been implemented. Access to interior marsh sections by SRSC contractors will be facilitated by preparation work carried out by OHPW.

This project change request is especially important because it is the only funding source that will allow construction to proceed in 2007, which will increase overall project efficiency by allowing SRSC to work in conjunction with OHPW. Salmon Recovery Funds transferred from Arrowhead Lagoon to Crescent Harbor Salt Marsh would be specifically applied towards construction of the northeast sewer intake dike breach.

### Match Sources:

In addition to the \$30,000 in staff and engineering resources provided by NASWI, work carried out by OHPW during the summer of 2007 to protect the WWTP from tidal scour might qualify as match for this project, but this has not been resolved the City of Oak Harbor at this time. An ESRP (Puget Sound Nearshore) grant application was submitted in late May and the project has been selected for funding.

# Staff Recommendation:

Staff recommends approving this change in restoration sites. Both projects are nearshore pocket estuary projects in the same Lead Entity area, Island County. However, the Crescent Harbor project is of much larger magnitude with a greater benefit to salmonids. The Arrowhead Lagoon project is unable to be completed due to one landowner out of a homeowners association not supporting the initial project design. The Crescent Bay project is an excellent project and is partially through construction and ready to be completed. The project has already been reviewed by the SRFB Review Panel for the initial design and partial construction, previously sponsored by Island County. Feasibility and design has been completed, and most of the permits are in place to proceed. The bridge has been completed by the Navy SeaBees and is currently awaiting the estuary reconnection to the sound. The Navy and the City of Oak Harbor are supportive of this restoration project. This project is on the Lead Entity and regional 3-year implementation list in the Puget Sound Chinook Recovery Plan and is currently the highest priority restoration action for the Lead Entity.

The Crescent Harbor Tidal Reconnection project was selected among many projects by the Estuary and Salmon Restoration Program (ESRP) to receive funding. The project was awarded \$417, 722 and the SRFB funds are needed to complete the project.

#### **Enclosures:**

Lead Entity Letter of Support Dept. of the Navy Letter of Support Map and Design Drawings

#### **SRFB Subcommittee Decision:**

SRFB Subcommittee Mark Clark and Joe Ryan and SRFB staff, Brian Abbott and Tara Galuska held a conference call on October 9, 2007 at 10am. The SRFB Subcommittee approved the scope change to move the project funds to the proposed restoration site.